



CASE STUDY: **Seamless Power Transition:** **Redesigning a Multi-Key** **Enclosure**

Our customer, an electrical engineering contractor, was working on a major upgrade project. We partnered with them to create a custom transition box system allowing safe and reliable switching between primary and secondary power sources, without interrupting the load.

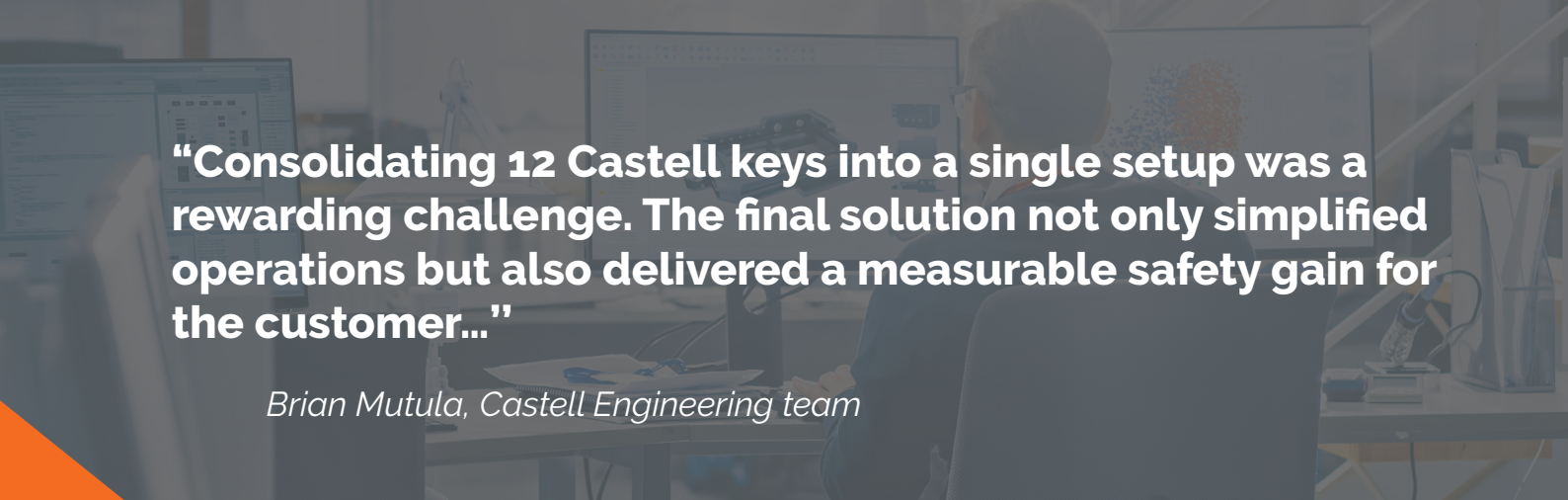
The result? We developed a smarter solution that brings together usability, compliance, and efficiency to meet their evolving operational demands. Thanks to our custom solution, enclosure maintenance will be reduced, allowing for simplified operations for them and seamless productivity for the end-user.

The project was delivered on time and within scope, delivering measurable value. Through design optimisation and reduced hardware, the customer benefited from cost savings. A precise layout simplified installation and commissioning, while the solution's usability and our technical support were highly praised.

Challenge: The customer's original design was bulky and relied on three different enclosures with four keys each, totalling twelve. This design was required to be consolidated into one enclosure, close to the specified original 600 × 400 mm footprint. The enclosure had further specifications of being mild steel, hinged, lockable, powder-coated to a specified RAL finish, and accommodate DIN rail terminals, control fuses, an AC transformer, and status lamps. It also required a single-phase 50Hz AC supply, door-mounted KSUPS switches with auxiliary contacts, and trifoliate labelling for each key.

Solution: Our engineers worked closely with the customer to conceive a simplified, efficient, and customised solution. We consolidated all twelve Castell keys into a single, slightly larger enclosure, simplifying the design and improving usability. We reconfigured control signals, to use all poles of the KSUPS switches, and integrated a custom transformer, to ensure reliable power. Improved termination and earthing enhanced safety, while the enclosure was fabricated to specification with all required components and labelling.

Results: By providing a single integrated box instead of three separate units, we streamlined the installation for our customer, simplifying coordination and setup on their end. Ultimately, productivity was boosted for the end-user, whilst maintaining safety standards.



“Consolidating 12 Castell keys into a single setup was a rewarding challenge. The final solution not only simplified operations but also delivered a measurable safety gain for the customer...”

Brian Mutula, Castell Engineering team

Simplification of a bulky setup

The existing system was already built around Castell's trapped key interlocking system, with each panel board featuring a primary and secondary incomer. The primary incomer key was trapped to keep it energised, while the secondary key remained locked in the transition box until a volt-free signal confirmed both supplies were aligned. Once released, the secondary key enabled the secondary source to be brought online, allowing the primary incomer to be isolated without any interruption to supply. While effective, the original design relied on three separate enclosures, each housing four keys, for a total of twelve. This operational setup was bulky and overly complex.

With the aim of simplifying the customer's bulky enclosure challenge, our engineers identified a solution to consolidate the twelve keys into a single enclosure, while keeping close to the original 600 x 400 mm footprint. The specification required a steel, hinged, and lockable enclosure, powder-coated to a defined RAL finish. Internally, it needed DIN rail

terminals, control fuses, a power source via an AC transformer, and status indicator lamps. The system also had to run from a single-phase 50Hz supply, with door-mounted KSUPS switches and trifoliate labelling for each key.

We collaborated with our customer to design custom interlocking systems, tailored to their unique operational requirements. Our team provided custom-engineered interlocking solutions that ensure access control, mitigate against accidents, and ensure compliance with safety standards.

From design to delivery

We reimaged the enclosure design to a slightly larger design, bringing all twelve Castell keys together in one compact, integrated unit. By reconfiguring control signals to utilise all poles of the KSUPS switches, we enhanced flexibility and functionality for the end user. A customer transformer was seamlessly incorporated to ensure reliable AC power, while upgraded termination and earthing practices reinforced safety and compliance. Every detail of the enclosure was

tailored to their specification: robust steel construction, hinged and lockable access, a powder-coated finish, and precise component integration with clear labelling. The result was a streamlined control panel that met all functional and safety requirements.

Our engineers ensured the control panel met all functional and safety standards. The customised solution improved efficiency by centralising signal monitoring, streamlining operations, and boosting productivity. By managing the system's design and coordination, we reduced the workload on the customer's internal team, allowing them to focus on other priorities.

The outcome?

By delivering a single integrated box, we simplified the design and installation for our customer, ultimately boosting the end user's productivity through centralised signal monitoring.

Our customer shared positive feedback, praising both the final solution and the technical support provided throughout the project.

This project exemplifies what our Custom Solution Design service is all about - partnering with you to engineer safety solutions that fit your environment, your equipment, and your goals. Whether you're facing legacy systems, complex interlocking logic, or site-specific compliance challenges, we're here to co-create solutions that work exactly as you need them to.

For more information about Castell Safety International and what we can do for you and your business, contact us today: sales@castell.com